

## Enteric Fever in the Urban District of Consett, in the County of Durham, during 1895.

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The town of Consett occupies a very exposed position, nearly 900 feet above sea level, in the north-west of the county, and about a mile west of the town of Leadgate, while the urban district of Benfieldside is situated a little to the north-west, at a much lower level. Consett has an area of 993 acres, and at the census of 1891 had a population of 8,175. The working population are mostly engaged by the Consett Iron Company either at their steel works or in the coal pits. Before dealing with the prevalence of enteric fever in Consett it will be advisable to shortly review the sanitary circumstances of the town.

HOUSE ACCOMMODATION.—A very large number of houses containing 3 or more rooms have been built during recent years, and these are of substantial construction and have through ventilation, but the sites are not as a rule rendered impervious over their whole extent, and ground air and moisture can therefore gain entrance to the houses. These houses have self-contained yards of fair size, which are sometimes paved or cemented either wholly or in part, but many of the yards are mostly unpaved, and in wet weather water stands in them and they become frequently very dirty and objectionable. This was especially noticeable in Constance Street, Edith Street, and Harvey Street. The older houses in the town usually consist of only one kitchen and an attic, and are mostly of very poor construction. In Pitt Street and Rippon's Lane there were several occupied houses not in a habitable condition, while in the Cross Rows, Thomas Street, Trafalgar Street, John Street, William Street, Pitt Street, and other parts of the town the dwelling-houses or their surroundings are far from sanitary, though some of the defects are the result of neglect or wanton destruction on the part of the occupants, some of whom are of a very bad class.

WATER SUPPLY.—The town of Consett obtains its water supply from the mains of the Consett Water Company, which also distribute the same water to a large population in other parts of north-west Durham. It is a soft moorland water of good quality, but as it is not filtered it is at times somewhat discoloured by particles of suspended peaty matter. The water gravitates from one large distributing reservoir to supply the various districts, and the service is constant. At the present time the company are engaged in increasing their supply and in providing means for filtering the water before supplying it for drinking purposes.

**DRAINAGE, SEWERAGE, AND SEWAGE DISPOSAL.**—With few exceptions, the house drains are properly trapped, though inside several houses where cases of enteric fever occurred there were slop-sinks directly connected with the sewers without any proper trap. The house drainage of some of the old property in the town is, however, far from satisfactory, the gully traps being near to the back doors, and the ground round them not being paved. The drainage of the Cross Rows is especially insanitary, consisting of very defective brick open channels placed against the backs of the houses, and discharging at the ends of the rows into large gullies, which are often placed close to a dwelling, and as they are not self-cleansing, and hold several gallons of liquid, they are frequently very offensive. The Surveyor informs me that the whole of the sewers are properly constructed pipe sewers, with a good fall. They are provided with ventilators at the street level, and also with a few 4-inch ventilating pipes carried up the sides of buildings, but owing to complaints of smell arising from them, the former have been covered with a tightfitting metal plate, which prevents the sewers from being properly ventilated. The sewers are said to be flushed from time to time, but during my inspection I frequently heard complaints of smells arising from surface water gullies and house drains, which would suggest that the water had evaporated from the gullies during the hot weather, so that they acted as ventilators for the sewers.

The greater part of the sewage of Consett is treated on grass land to the west of the town by surface irrigation. The sewage is carried straight on to the land without any previous precipitation or subsidence, but it is apparently satisfactorily disposed of without nuisance. The sewage from about 270 houses in Consett passes, however, into the sewers of the Benfieldside urban district, while from 69 houses in Sherburn Terrace the sewage enters the Leadgate urban district, where it seriously pollutes a small stream. I am informed by the surveyor of Consett that steps are about to be taken to prevent this pollution.

**EXCREMENT DISPOSAL AND REMOVAL.**—The system of excrement disposal which chiefly obtains in Consett is that of the midden-privy. The District Council has recently decided not to permit the erection of ashpit-privies in connection with new houses, and for some time they have insisted that the ashpits should be covered over. But even the conveniences that have been erected of recent years are mostly very objectionable, as there is no provision for the proper admixture of excreta and ashes, and the ashpits are for the most part large, deep, and below the level of the surrounding ground. In the older parts of the town the ashpits are uncovered, of bad construction, frequently close to the houses, and often productive of serious nuisance. This is especially the case in the Cross Rows, where the ashpits are close to the back doors of the houses, very large and offensive,

and a standing menace to the health of the tenants. In Pitt Street, John Street, Trafalgar Street, William Street, Rippon's Lane, Raglan Street, and in other parts of the town the middens are in many instances most insanitary, and had much to do with the spread of enteric fever. There are also a number of water-closets in Consett (according to the estimate of the surveyor about 400). Some years ago the Local Authority insisted on water-closets being provided to a number of houses in the crowded part of the town occupied by a bad class of tenants. Owing to neglect and wanton destruction on the part of the occupiers and want of proper supervision by the owners and the Local Authority, many of these water-closets, especially in William Street and Trafalgar Street, have got into a bad sanitary condition owing to want of a water supply and dilapidation. While some form of water-closet is the only sanitary system of excrement disposal available in the small yards of crowded streets, it is essential, especially where the tenants are careless and destructive, that the conveniences should be regularly and frequently inspected by the officers of the Sanitary Authority; and a few prosecutions of defaulting tenants under section 21 of the Public Health Acts Amendment Act would do much to impress on them the necessity of keeping the water-closets clean and in good condition.

The cleansing of the ashpits and privies, and the removal of house refuse is not undertaken by the District Council. The Consett Iron Company undertake the removal of refuse from the houses owned by them, and appear to perform the work fairly satisfactorily; but as regards the private property, the duty usually falls upon the tenants, who are unable to arrange for frequent and systematic scavenging, and the ashpit-privies frequently become too full and a nuisance. The medical officer of health has on many occasions urged the Local Authority to hold themselves responsible for the scavenging and removal of refuse, and till his advice is acted upon nuisances from filth accumulations are bound to occur.

**COWSHEDS, DAIRIES, AND MILKSHOPS.**—Regulations under the Dairies, Cowsheds, and Milkshops Order of 1885, were adopted by the Local Board in 1887, but they are of too general a character to be of much value, and they do not appear to have been very strictly enforced. A register is kept of the cowkeepers and milksellers, but judging by the condition of the cowsheds when inspected by me, they do not receive that attention from the Sanitary Authority which is desirable, as several of the byres were kept in a very dirty condition and were not fit to be used for the housing of milch cows owing to insufficient air space and defective lighting, ventilation, and drainage. Some of the circumstances connected with the sale of milk were also unsatisfactory, in one instance the milk was stored and sold in a butcher's shop, while several other milkshops were from their condition or surroundings quite unfitted for the storage or sale

of milk. Much of the milk supply of Consett is obtained from farms outside the town, which are for the most part kept in a fair condition, but a more efficient sanitary supervision of the milk trade in Consett itself is very desirable.

**SLAUGHTER-HOUSES.**—The butchers have their own private slaughter-houses, or else kill their beasts in their shops, a common practice in the north of England. I am informed that a register is kept of the slaughter-houses in the town, and those that were inspected by me were kept in a clean condition. There is, however, no special supervision of either the slaughter-houses or meat supply.

### Sanitary Administration.

The sanitary staff consists of the medical officer of health (Dr. Geo. Renton) who also acts in that capacity for the adjoining towns of Benfieldside and Leadgate, and one inspector of nuisances (Mr. Rippon) who also acts as surveyor and rate collector, and has held his appointment since 1878. The Infectious Diseases Notification Act was adopted in the town in 1893, and the Local Authority also adopted in 1894 the sanitary provisions of the Public Health Acts Amendment Act, 1890. They have not however adopted any of the provisions of the Infectious Diseases (Prevention) Acts, 1890. As one of the districts constituting the Lanchester joint hospital district, the town of Consett has the use of the joint hospital near Leadgate. The hospital is built of brick, is of good construction, and has accommodation for the treatment of three separate diseases at the same time. It is provided with a hot air disinfecting apparatus, which, however, is not very efficient, and a proper steam disinfecting apparatus is desirable.

The sanitary bye-laws of the town were adopted as far back as 1866, and deal with :—

1. The laying out of streets, and the erection of new buildings.
2. The prevention of nuisances.
3. The cleansing of footpaths and the removal of refuse.
4. The regulation of slaughter-houses.

Owing to the rapid advance of sanitary knowledge, these bye-laws are in many respects out of date, and inadequate for enforcing necessary sanitary requirements. The District Council have recently drawn up new sanitary bye-laws, which however have not yet received the sanction of the Local Government Board.

Regulations with respect to the management of dairies, milk-shops, and cowsheds were adopted for the town in 1887, but they do not prescribe the minimum cubic air space to be allowed in the cow byres for each cow, and in other important particulars are of too general a character to be of much value.



## Enteric Fever.

In past years enteric fever does not appear to have been as prevalent in the Consett district as in many other parts of the county, though as the Infectious Diseases (Notification) Act was not adopted till July, 1893, the prevalence of enteric fever prior to that date can only be judged by its mortality. As will be seen in the following table, there were only five deaths from enteric fever during the five years 1890—4, and in three of those years there was not a single death from that disease, so that it can be safely said that during the present decade at any rate there has not been, prior to 1895, any epidemic prevalence of enteric fever.

The following table gives the total number of cases notified in each of the quarters of the past 5 years, the bracketed figures indicating the number of deaths:—

	1890.	1891.	1892.	1893.	1894.
1st quarter ..		..	..	(1)	2
2nd quarter ..	5 cases, and no	..	1 (1)	1 (1)	7
3rd quarter ..	deaths during	..	1 (1)	11*	..
4th quarter ..	the whole year.	..	..	7 (1)	3

\* The Notification Act came into force in the district in July, 1893.

In marked contrast to previous years was the prevalence (and mortality) of enteric fever during 1895, for, with the single exception of March, cases were notified during every month of the year, and during the late summer and autumn the disease was fatally epidemic. In January there were 4 cases notified, as well as 3 cases of continued fever, and in the following month 6 cases of enteric fever and 1 of continued fever were reported. In each of two houses infected during these months there were 3 cases of typhoid, but so far as I could ascertain there were no noticeable sanitary defects in connection with any of the houses infected during these months. During March and April only one case was notified, but in each of the next four months the disease was unduly prevalent, and 19 cases (3 of them fatal) were equally distributed over this period, the incidence of the disease as regards locality being most marked on houses in or near the Cross Rows. But it was during September and October that the disease became severely epidemic, no less than 83 cases (9 deaths) being notified during these months. The epidemic commenced to abate about the middle of October, but cases continued to be reported up to the end of the year, and during November and December there were 9 more deaths from typhoid fever. There was the same delay in notifying many of the cases as I noticed in connection with the Leadgate epidemic, in some instances several weeks elapsing between the dates of attack and notification. In such cases

notification is of little value, as before the sanitary officers can take precautionary measures against infection the disease may have been spread to other persons. During the epidemic, cases were reported from nearly every part of the town, but in certain districts the disease was especially prevalent, notably in the locality embracing Pitt Street, John Street, and Trafalgar Street, and in Princes Street and King Street.

The following table shows approximately the number of houses invaded by enteric fever during each of the months of 1895, together with the number of cases notified, and the number of deaths:—

1895.	ENTERIC FEVER.		
	No. of Houses Invaded.	No. of Cases.	Deaths.
January.. ..	3	4	..
February .. ..	3	6	..
March .. ..	..	..	..
April .. ..	1	1	..
May .. ..	4	5	1
June .. ..	2	5	..
July .. ..	4	4	1
August .. ..	4	5	1
September .. ..	40	45	5
October .. ..	30	38	4
November .. ..	11	14	5
December .. ..	5	7	4
	107	134	21

The subjoined table gives the number and sex of the persons who suffered from enteric fever in Consett from January 1st to December 31st, 1895, at different age periods; also the age and sex of the fatal cases within the same period:—

	CASES.			DEATHS.		
	Males.	Females	Total.	Males.	Females	Total.
Under 5 years .	1	6	7	..	..	..
5 to 10 „ ..	12	5	17	..	..	..
10 „ 15 „ ..	8	14	22	..	1	1
15 „ 25 „ ..	26	16	42	2	1	3
25 „ 40 „ ..	18	16	34	6	5	11
40 „ 60 „ ..	3	7	10	2	2	4
60 and upwards ..	2	..	2	2	..	2
	70	64	134	12	9	21

The above figures show that while the case mortality was very low among those attacked under 15 years of age (2·1 per cent.), it was extremely high above that age period (22·7 per cent.), and progressively increased during each of the successive age periods from 10 years upwards.

In the next table are given the rates of enteric fever attack in Consett during 1895 per 1,000 living of each sex at certain age periods, and it will be seen that there was a slightly greater incidence of attack on females than males, which is in marked contrast to the behaviour of the coincident epidemic of typhoid fever in the neighbouring town of Leadgate, where the incidence of attack was especially marked on the male sex :—

	At all Ages.	Under 5 Years.	5—10	10—15	15—25	25—40	40—60	60 and upwards
Males ..	15·9	1·9	23·1	17·1	29·3	17·5	3·8	10·4
Females..	16·8	11·0	10·4	29·9	19·3	21·9	12·6	..
TOTAL ..	16·3	6·6	17·0	23·5	24·5	19·3	7·4	5·1

### Type and features of the Outbreak.

In my report on the epidemic of enteric fever at Leadgate I pointed out that many of the patients notified as suffering from that disease at no time suffered from purging or diarrhoea, but that on the other hand there was frequently marked constipation. The same peculiarity was noticeable in respect to a large proportion of the cases notified in Consett as suffering from typhoid fever, as also in several other districts in the county where that disease has been prevalent of recent years. Many of the enteric fever patients in Consett had few or none of the prominent symptoms of that disease, the illness being ushered in with a feeling of weariness and lassitude, which advanced to varying degrees of prostration according to the severity of the attack. In other cases headache and bleeding from the nose, together with pains in the back and bowels, were the prominent symptoms, while in the majority of the fatal cases the typical symptoms of typhoid fever were usually present—the rash in several cases being very prominently developed. Some of the cases were of very mild type, this being especially the case among those patients who were under 15 years of age, and in several instances the illness was so slight and its duration so short that I think they were probably not cases of typhoid fever; on the other hand, I ascertained the existence of several cases of illness which from their history were probably those of typhoid fever, though they had not been notified. As at Leadgate, the great majority of the persons attacked by

enteric fever were aged between 15—40 years, and the degree of prevalence of the disease in Consett and Leadgate in point of time was almost identical, as is seen from the following table :—

Cases of enteric fever in the adjoining urban districts of Consett and Leadgate during 1895 :—

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Consett..	4	6	..	1	5	5	4	5	45	38	14	7
Leadgate	..	..	2	..	3	3	1	2	92	59	10	4

On the other hand the case mortality was very much greater in Consett, being 15·6 per cent., as compared with 5·2 per cent. in Leadgate ; and another point of difference in the epidemics in the two towns, which, however, may have resulted from the different occupations of the inhabitants, was that while the incidence of attack was in Consett almost equal on males and females, in Leadgate it was much more marked on the male sex.

### Precautionary measures adopted in connection with the Outbreak.

A number of the patients were removed to the isolation hospital at Leadgate, but owing to the epidemic prevalence of enteric fever not only in Consett but in other districts for which the hospital is available, it would not have been possible to isolate in that institution more than a small proportion of the cases. But on the other hand, no special effort appears to have been made to persuade many of those patients in whose homes proper isolation was impossible to take advantage of the hospital, and no doubt in several instances such cases acted as foci of infection. Handbills were drawn up by the Medical Officer of Health which advised that the milk and water supplies should be boiled, and that the excreta of patients should be thoroughly disinfected, &c., and these were circulated among the inhabitants. On application to the Inspector of Nuisances disinfectants were also supplied to houses where cases of fever occurred, but no systematic supervision over the disposal of infected excreta was exercised by the Local Authority, and many of the ashpit-prives became specifically infected. Neither was there any proper disinfection or fumigation of houses where cases of fever had occurred, and no special disinfection of the drains, sewers, or midden-prives appears to have been practiced during the epidemic. Had these precautions been adopted by the District Council, and had a trained nurse been engaged to attend the patients who were treated in their homes, I have no doubt that the extent and mortality of the epidemic would have been considerably curtailed.



## Origin and diffusion of the Fever.

For several years past the prevalence of enteric fever in the county of Durham has been more marked than in any other part of the country, and in this respect the past year was no exception, as the typhoid death-rate in the county (0·37 per 1,000) was more than twice as high as that for England and Wales (0·17 per 1,000). But though enteric fever was undoubtedly very prevalent in many parts of Durham during 1895, in no districts was it so epidemic and fatal as in the adjoining urban districts of Consett and Leadgate. In these two districts of about 13,000 population nearly one-sixth of the whole of the cases of enteric fever notified in the administrative county occurred, while the death-rate from that disease in these towns was equal to a rate of 2·3 per 1,000 population, or more than six times as high as the high rate for the county. Seeing that the death-rate from enteric fever in Consett and Leadgate has in previous years averaged considerably less than that for the county, it appeared likely that there were some special local conditions in these towns which favoured the prevalence of that disease in 1895, and taking into consideration their proximity to one another, and the fact that the dates of the epidemic prevalence of enteric fever in the two towns was practically identical, there was *primâ facie* evidence that some common cause operated to produce the epidemic in both places. I have already reported on the epidemic at Leadgate, and have pointed out that there were circumstances connected with the water and milk supplies, and with the fouling of the air by emanations from sewers and filth accumulations which would probably account for it, and in like manner I propose to briefly deal with the likelihood of the Consett epidemic having been caused by any similar conditions, and especially by such conditions as were common to both towns.

### The water supply in its relation to the epidemic.

The town of Consett is supplied with water by the Consett Water Company, as is also Leadgate and many other populous districts. The whole of the water supplied by the company passes from one distributing reservoir near Waskerley, and as many of the centres of population using the company's water were practically free from enteric fever during its epidemic prevalence in Consett and Leadgate, it is evident, as I pointed out in my Leadgate report, that the fever in Consett and Leadgate could not have been caused by the specific contamination of the water supply at its source, but that if the water was at all to blame, it must have become polluted in the local water mains supplying these towns. But while, in the case of Leadgate, I was able to obtain evidence from which I formed the opinion that the epidemic prevalence of enteric fever there was probably dependent to some extent on a local contamination of the water supply, I could obtain no direct evidence in support of that view so far as the town

of Consett was concerned, although I made careful enquiries. The engineer to the water company informed me that the water supply to Consett had not been cut off at any time during the summer, nor had there been any serious diminution in the pressure in the mains, and by independent enquiry I confirmed this statement; and though complaints were made to me that the water was at times turbid and discoloured, this discoloration appears to have been due to suspended particles of peaty matter, which, as the water is not filtered, at times finds its way into the pipes. On the other hand, I do not feel justified in definitely excluding the possibility of the water supply to Consett having been responsible to some extent for the typhoid epidemic in that town, for the water supply is about the only sanitary circumstance common to both Leadgate and Consett, and it is not a little curious that epidemics of a disease—one of the chief causes of which is the consumption of polluted water—should have broken out simultaneously in these two towns. In Consett there are the old fashioned ball valve hydrants fixed into a number of the water mains, and, as I pointed out in my Leadgate report, these are a source of danger, for under certain conditions foul matter may be drawn through them into the water mains. Again the possibility of lateral insuction into the local water mains of sewage or foul subsoil water through joints which have become defective owing to subsidences from coal workings must not be overlooked. Another point to be noted in dealing with the water supply in its connection with the prevalence of fever is that in Consett Terrace and Puddlers' Row, situated at the extreme west side of the town, there are over 80 houses with a population of nearly 500 persons. The sanitary surroundings of many of these houses are certainly not good, but during the epidemic there was only one case of typhoid fever among this population, and that occurred when the epidemic had nearly abated. The water mains from the distributing reservoir pass along the road in front of these houses, and their water supply is obtained by a small pipe from one of the mains before it enters Consett and before the branch mains supplying the town are given off, so that the supply to Consett Terrace and Puddlers' Row has no direct connection with the water supply to the rest of Consett, and any local contamination of the branch mains supplying the town would not affect the supply to these houses. The absence of enteric fever from these houses would therefore not be inconsistent with a local contamination of the water in some of the branch pipes supplying Consett. Personally I do not think that the water supply was responsible for the epidemic of fever in Consett during 1895, but the possibility of the local contamination of water supplies must not be disregarded when the causes of outbreaks of enteric fever are being investigated.

### Milk Supply.

I made careful enquiries into the milk supply with the object of ascertaining if the epidemic in whole or in part might have been

caused by its specific contamination, but as far as I could ascertain the milk supply had very little if any causal relation to the prevalence of typhoid fever. It is true that more than one-half of the patients obtained their milk supply from two dairies, but on the other hand the quantity of milk sold from these dairies was very much larger than from any other milk shops in the district, and the incidence of attack on the customers of these two particular dairies was no greater than on persons obtaining their milk from other sources. Also the sanitary condition of these two dairies and of the farms supplying them with milk was fairly satisfactory, and certainly far in advance of some of the other dairies and farms supplying milk to the town. One farm outside the district which I inspected, and which supplied milk to several houses which became infected with enteric fever both in Consett and Leadgate, was in a most grossly insanitary state; and in another farm, also outside the district, there was a case of enteric fever at the time milk was being sold from it in Consett; but the number of infected houses supplied from these two farms was so small compared with the total number of houses infected during the epidemic that their milk at any rate could only have been small factor in the causation of the epidemic, and seeing that a very large number of houses supplied with their milk did not become infected, it is doubtful if the milk was at any time specifically polluted. In a previous part of this report I have referred to the existence of objectionable conditions in connection with the keeping of cows and the storage of milk in Consett, but I am forced to the conclusion that the epidemic of enteric fever in Consett was not in any measure caused by specific pollution of the milk supply.

### **Influence of specific emanations from drains, sewers, middens, &c., in spreading the fever.**

There can be no doubt that many of the cases of typhoid fever in Consett may have been caused by the grossly insanitary conditions which exist in some parts of the town. In the first place a number of the cases occurred in houses whose drainage was insanitary. In the Cross Rows, for instance, the only drains provided for the houses are very defective brick channels running along the back walls of the houses, which are not only very offensive, but their contents sink into and pollute the ground about the houses. At the ends of these rows the channels empty into large gully traps which hold several gallons of liquid. These gullies are not self-cleansing, and they frequently become very offensive owing to the accumulation of filth in them, and are then practically small cesspools. If the slops from a house infected with enteric fever are poured into such channels as exist in the Cross Rows, the danger to persons living in the houses past which such slops run is self-evident, and without doubt the emanations from these defective and probably infected channels, and from the large gullies into which they discharge may have contributed to

the prevalence of enteric fever in some of the Cross Rows. In several houses where cases of enteric fever occurred, sewer gas could find its way into the dwellings owing to the sink discharging without any disconnection into the sewers, and it is quite probable that the fever may have been caused by such a sanitary defect. Again, many complaints were made of the bad smells arising from the surface water gullies by the side of the roadways, and it is likely that during the hot dry weather of September the traps of these gullies became in many instances nusealed by the evaporation of the water in them, in which case sewer gas would escape and be a source of danger to persons passing near them or living in their vicinity, more especially as the proper sewer ventilators had been mostly stopped up. But while I have no doubt that specific emanations from the drains and sewers played some part in the causation of typhoid fever in Consett, there is much more certain evidence that the disease was in no slight degree disseminated by the very insanitary condition of the ashpit-privies in many parts of the town. Thus a number of cases which occurred in Pitt Street and John Street undoubtedly contracted the disease by using a filthy privy infected by a patient suffering from enteric fever, and in King Street, Princes Street, Raglan Street, Harvey Street, and other parts of the town, it is highly probable that many of the patients contracted the disease by using privies that had become specifically infected, and were for the most part grossly insanitary; in fact it is very remarkable that in past years Consett should have been comparatively free from enteric fever, considering how insanitary, in many respects, is its system of excrement disposal. No precautions were taken by the District Council to insure the proper disinfection of the dejecta of patients suffering from typhoid fever, and in the majority of cases the infected material was thrown into the ashpits without any proper disinfection, so that they became centres of infection not only to persons using them, but also owing to infected dust from them being blown through the doors and windows of the houses and contaminating articles of food. This would especially be likely to occur where the middens were in close proximity to the houses, and during the time they were being emptied. With so many suitable centres for its development as the large number of insanitary middens in the town afforded, it was only to be expected that under the very favourable climatic conditions that obtained during September, typhoid fever when once introduced would rapidly spread, and I am of opinion that the emanations from specifically infected ashpit-privies, and probably also from infected drains and sewers were chiefly responsible for the epidemic of typhoid fever which prevailed in Consett during 1895. During my enquiry I obtained much evidence that typhoid fever, either directly or indirectly, is a much more infectious disease than is generally supposed. In one house the husband and wife were attacked by the disease, and a relation who frequently attended and nursed them during their illness, but did not live in the house, as well as a



woman, living in another part of the town, who washed their clothes, afterwards contracted typhoid fever, no doubt as the result of their connection with the infected household. The occurrence of so many secondary cases in houses already invaded by the disease also points to its infectious nature under favourable conditions, though if the Sanitary Authority insist on proper precautions being observed, no other infectious disease, as regards direct infection, is so easily controlled.

## Sanitary Requirements.

As indicating some of the more important sanitary requirements of the town of Consett, I cannot do better than quote the following recommendations which were made to the Urban Sanitary Authority more than two years ago by the Local Government Board, and which so far have not been for the most part carried into effect :—

### *“1.—General Duties under the Public Health Act.*

#### 1.—EXCREMENT AND REFUSE DISPOSAL.

The Authority should take into immediate consideration the best method of dealing with the large privy-middens in the district, which in their present form are a source of nuisance of the gravest kind, and cannot fail to be injurious to health. Where fixed receptacles for excrement and refuse are retained they should be reduced to the smallest practicable dimensions, and so constructed as to keep out all unnecessary moisture, and to facilitate the mingling of ashes and excrement. Whatever method for the disposal of excrement and refuse the Authority may adopt, it is desirable that they should themselves, under section 24 of the Public Health Act, 1875, undertake the removal of such matter from house premises at regular and frequent intervals.

#### 2.—CONDITIONS OF DWELLINGS.

(a) The Sanitary Authority should cause all dwellings which from dampness, want of ventilation, dilapidation, or other structural defects are unfit for habitation, to be placed in proper repair, or permanently closed.

(b) The attention of the Authority should be especially given to the danger to health arising from the dampness in foundations and walls, due to the absence of proper spouting for the conveyance of rain water from the roofs of houses, and due to the soakage from the uncemented brick-built channels so frequently laid alongside the house walls in their district.

(c) Yards and open spaces about houses should be properly levelled and paved, or laid with suitable materials so as to secure efficient drainage and cleanliness.

## 3.—BYE-LAWS.

With a view to secure the more efficient sanitary administration of the district the Authority should, under the advice and with the assistance of their medical officer of health, draw up a code of bye-laws with respect to nuisances, new streets and buildings, common lodging-houses and slaughter-houses, based on the model series issued by the Local Government Board, to replace their present series. The Authority would also do well, by the adoption of the Public Health Amendment Act, 1890, to obtain the power of making bye-laws with respect to the paving of yards and open spaces in connection with dwelling-houses, and for other matters (see section 24 of the said Act).

## 4.—SLAUGHTER-HOUSES AND COWSHEDS AND DAIRIES.

The improvement of the cowsheds and dairies in the district, and the proper regulation of the slaughter-houses in accordance with the regulations and bye-laws in force, demand the immediate attention of the Authority."

It is most important that the District Council should carry out the above recommendations without any further delay, and it is also desirable that:—

(a) All the sewers should be freely and properly ventilated, and, especially during hot, dry weather, be systematically flushed:

(b) Care be taken that the surface water gullies do not become untrapped owing to evaporation of the water seal:

(c) The ball valves which are placed on some of the fire hydrants should be substituted by proper screw-down valves, as at present there is a possibility of foul matter gaining access to the water pipes during any intermission of the supply:

(d) The District Council should insist on the systematic disinfection of houses invaded by infectious disease, and of infected bedding and clothing; and in all outbreaks of enteric fever they should supply to the infected houses galvanized covered pails containing disinfectants for the reception of the excreta of the patients.

My thanks are due to the medical officer of health (Dr. Renton), and the surveyor (Mr. Rippon), for the assistance they so readily gave me during my enquiry.

T. EUSTACE HILL,

County Medical Officer.

*March, 1896.*